implemented within a short timeframe.[179] Rate center consolidation may, however, have disruptive impacts on carriers and customers.[180] For example, where local calling scopes must be modified in connection with rate center consolidation, carrier revenue may decrease, because a larger percentage of revenue may be derived from basic local service and a smaller percentage from toll service.[181] Correspondingly, customers' local service rates may increase and they may experience other types of confusion or inconveniences when their calling areas change.[182] Also, a complex consolidation scheme may involve expensive modifications to carriers' switches and operations support systems (OSS).[183] Furthermore, rate center consolidation can cause a disruption in the routing of E911 calls because default routing of 911 calls is NXX driven.[184]

115. The experiences of the state utility commissions that have implemented rate center consolidation or have studied its potential impact demonstrate that this measure brings varying levels of number conservation benefits and disruptive impact, depending on the effect on calling scopes and the complexity of the rate center geography.[185] While some states are

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[179] NANC Report at § 1.3. *See also* ALTS comments at 7; MediaOne comments at 5; U S West comments at 27. Because rate centers are regulated by states, rate center consolidation requires state regulatory approval. NANC Report at § 1.10.1.

[180] SBC comments at 29.

[181] NANC Report at § 1.1; AT&T comments at 5-6; California Commission comments at 4-5; Madison comments at 2; Pennsylvania Commission comments at 14. When expansion of a local calling area occurs, a larger percentage of the revenue may be derived from basic service and a lesser percentage from toll service. NANC Report at § 1.4.2.

[182] NANC Report at § 1.8.1; Florida Commission comments at 2-3. *See also* ALTS comments at 8 (recognizing that some customer confusion may result from a rate center consolidation, but arguing that such confusion would be less than the customer confusion caused by the implementation of a new area code).

[183] NANC Report at § 1.6.1; New York Commission comments at 9. Rate center consolidation in New Jersey would cost service providers as much as $20 million. NANC Report at § 1.4.1.

Operations Support Systems (OSS) are systems that directly support the daily operation of the telecommunications infrastructure. The average LEC has hundreds of OSS, including automated systems supporting order negotiation, order processing, line assignment, line testing, and billing. *See* NEWTON'S TELECOM DICTIONARY, 14th Edition, at 521.

[184] NANC Report at § 1.9.1; NENA comments at 2-3; Texas Commission comments at 13; SBC comments at 29.

[185] The NANC Report found that 17 states favor the implementation of rate center consolidation and seven states have implemented or plan to implement this measure. NANC Report at §§ 15.2 and 15.4. In Texas, SBC consolidated 108 rate centers to 31 within four months of regulatory approval by the Texas Commission in rate

enthusiastic about implementing this measure, others contend that rate center consolidation may not be the best solution for their particular circumstances.[186]

116. As do most of the parties that commented on the NANC Report, we consider rate center consolidation to be a vitally important long-term measure to optimize the utilization of numbering resources.[187] We believe that rate center consolidation should be implemented to the greatest extent possible, and we seek comment on what actions this Commission should take to promote rate center consolidation.

117. We note that the Commission has previously encouraged states to consider rate center consolidation, among other measures, to decrease the frequency of the need for area code relief.[188] We wish to clarify our position that states do not require any additional delegation of authority from the Commission to engage in rate center consolidation.[189] Rather, because rate centers are inextricably linked with local call rating and routing issues,

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centers with common calling scopes in Houston, Dallas, Fort Worth, Austin, and San Antonio. Because calling scopes were not affected, there was no increase in rates or customer confusion. NANC Report at §§ 1.1 and 1.3; *see also* Number Conservation Measures in Texas, Order No. 1, Texas Commission Project No. 18438 dated (January 20, 1998); Number Conservation Measures in Texas, Order No. 5, Texas Commission Project 18438 (dated July 10, 1998)

Also, U S West consolidated 43 rate centers to 16 within Colorado's 303 area code. Because calling scopes were affected, however, consumers experienced a modest increase in rates and some confusion about the modified calling scopes. NANC Report at § 1.1; *see also* Rate Center Consolidation within the 303 Area Code, Creation of a Single Local Calling Area Defined as All Territory Within the 303 Area Code, and Permissive 11 Digit Local Dialing, *Decision and Order*, Decision No. C98-439, Docket No. 97M-548T, at 21 (dated April 29, 1998).

Minnesota consolidated 21 rate centers into 1 within six months of regulatory approval by the Minnesota Commission. NANC Report at § 15.4; *see also* Request by U S West Communications, Inc., to Consolidate its 21 Rate Centers in the Minneapolis-St. Paul Metropolitan Exchange Area into a Single Rate Center in Minneapolis, *Order Approving Rate Center Consolidation*, Docket No. P-421/EM-97-85 (April 24, 1997).

[186] *See* Florida Commission comments at 2-3 (some states may have statutory obstacles to expanding calling areas); Maine Commission comments at 8-9; New York Commission comments at 9; Pennsylvania Commission comments at 14.

[187] *See, e.g.*, AirTouch comments at 3, 15; AT&T comments at 5; Bell Atlantic Mobile comments at 13; GTE comments at 8-9; MediaOne comments at 4-5; SBC comments at 29.

[188] *See Pennsylvania Numbering Order*, 13 FCC Rcd. at 19029.

[189] The Florida Commission has filed a Petition for Reconsideration seeking clarification on this issue. *See* Common Carrier Bureau Seeks Comment on the Florida Public Service Commission's Petition for Authority to Implement Number Conservation Measures, *Public Notice*, NSD File No. L-99-33, DA 99-725 (rel. April 15, 1999).

which fall within the traditional jurisdiction of state public utility commissions, we believe that state commissions have full authority to order rate center consolidation, and need obtain no further authorization from this Commission. We reiterate our support of state action to consolidate rate centers to improve numbering efficiencies.

118. We seek comment on how we may further encourage states to implement rate center consolidation where beneficial impacts could be achieved. For example, would delegating additional authority to state commissions to require codeholders to return vacant, unused codes that are no longer needed because of consolidation, as is proposed above in Section IV, help them to realize the full benefits of rate center consolidation?[190] We also seek comment on whether and how the FCC or state commissions can create incentives to encourage incumbent local exchange carriers (ILECs) voluntarily to combine rate centers for the purpose of improving the efficiency of number utilization and slowing NPA exhaust rates. In addition, we seek comment on whether the introduction of intraLATA dialing parity, and the heightened competition that it may bring to the short-haul toll market, may lessen incumbent carrier resistance to rate center consolidation.[191] In addition, because the advent of competition in the short-haul toll market may reduce ILEC revenue for these calls, we seek comment on whether ILEC migration to larger calling areas must, as anticipated by state commissions, necessarily result in higher rates being charged for basic service.

119. Although we believe that rate center consolidation will assist us in optimizing our numbering resources, we agree with MCI WorldCom that this measure will not, by itself, substantially reduce the demand for NPA relief until the industry addresses the underlying problem of associating call rating with NXX assignments.[192] Therefore, we seek comment on whether there are ways to separate the call rating functions from the call routing functions, which would result in a reduced demand for NXX codes. We note that the Colorado Telephone Numbering Task Force recommends eliminating the link between call rating and NXX codes by investigating the possibility of using the Signaling System 7 (SS7) network, rather than the current reliance on associating NPA-NXXs with the specific vertical and horizontal (V&H) coordinates of a rate area to transmit the information required for the rating

[190] Texas Commission comments at 11-12.

[191] With dialing parity, a telephone customer can presubscribe to and use any provider of telephone exchange service or toll service without having to dial extra digits to route a call to that carrier's network. 47 U.S.C. § 153(15). *See also Local Competition Second Report and Order*, 11 FCC Rcd 19392; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, *Order*, FCC 99-54 (rel. March 23, 1999).

[192] MCI WorldCom comments at 26. *See also* Texas Commission comments at 35 (stating that the established rating and billing procedures using rate centers are the primary cause of the rapid exhaust of the NANP and, thus there should be a migration from traditional rating and billing methods to usage-sensitive rates).

and routing of every call.[193] Use of the SS7 network to transmit information for call rating would enable carriers to maintain their existing rate centers and to route calls according to their current network configuration. The adoption of this call rating method, however, will require that carriers complete a query for every call and modify their databases to include additional information, such as network addresses, LRNs, and/or V&H coordinates for the calling and called parties, on the SS7 call record. Furthermore, carriers may have to develop systems to inform consumers whether they are making a toll or local call through an audible or visual method. We believe that this proposal offers the possibility of greatly reducing the demand for additional NXX codes and thus merits further investigation. We seek comment on the Colorado Task Force's proposal. We also seek comment on whether the database modifications that carriers must make to accommodate LNP are similar to the modifications required to implement call rating using the SS7 network.

120. In addition, we seek comment on the relationship between rate center consolidation and other numbering optimization measures we may adopt, particularly number pooling.[194] We seek comment on whether rate center consolidation should necessarily precede moving to pooling in an area, or whether it is possible to implement both measures simultaneously, and simply expand the pools as rate centers are consolidated. To the extent that commenters suggest that consolidating rate centers prior to number pooling would increase the effectiveness of pooling by creating fewer, larger pools within an NPA,[195] we seek comment on how we might create incentives for state commissions to undertake rate center consolidation prior to implementing pooling in an area. For example, should we grant states the authority to implement pooling only after they have undertaken rate center consolidation in the area in question? In the alternative, would requiring carriers to meet specified number utilization thresholds provide them the incentive to consolidate rate centers voluntarily?[196]

121. Finally, we seek comment on how to ensure that rate center consolidation does not adversely impact 911 systems, in particular the default routing of 911 calls. We further seek comment on what, if any, role the FCC should have in determining potential impacts on 911 systems, and implementing appropriate solutions to these problems. More specifically, are the issues that arise regarding 911 default routing sufficiently similar in each state that we should consider referring the matters to the NANC for a recommendation on a solution or set

[193] Colorado Telephone Numbering Task Force Report, Dec. 31, 1998, at § 5.5.2.

[194] *See infra* Section V.C.

[195] *See, e.g.*, Allegiance comments at 8; BellSouth comments at 16; NASUCA comments at 2; Pennsylvania Commission comments at 14.

[196] *See supra* Section IV.C.

of solutions that could be used in all states undertaking rate center consolidation?[197] We also seek comment on whether the FCC should take any actions to ensure that the concerns of the 911 community are addressed in the rate center consolidation process.[198]

### 2. Mandatory Ten-Digit Dialing and Related Measures

122. Currently, the standard dialing pattern is seven-digit dialing within an NPA, and ten-digit dialing between NPAs. Our area code relief rules dictate, however, that where overlays are used, ten-digit dialing is required not only between the original NPA and the overlay NPA, but also within each NPA, to prevent anticompetitive impacts on new entrants that may have few or no numbers in the original NPA.[199] There is often significant customer resistance to ten-digit dialing, which may explain why more state commissions have chosen to implement splits rather than overlays.[200] In fact, to preserve seven-digit dialing for inter-NPA calls within a community of interest, many states have authorized the use of "protected codes."[201]

123. *Mandatory ten-digit dialing and reclamation of protected codes.* Among the numbering optimization measures that do not require LNP, mandatory ten-digit dialing entails the dialing of ten digits for all calls, regardless of whether they are inter-NPA and intra-NPA and rated as local or toll.[202] Mandatory ten-digit dialing works as a numbering optimization measure by freeing up more numbering resources for use, through the reclamation of

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[197] NANC Report at § 15.4.

[198] NENA comments at 5.

[199] *See Local Competition Second Report and Order*, 11 FCC Rcd at 19518; 47 C.F.R. § 52.19(c)(3)(ii). *See also* NPA Code Relief Planning and Notification Guidelines (INC 97-0404-016, reissued Jan. 27, 1999), at § 6.3 (NPA Code Relief Guidelines).

[200] *See* NANPA, NPA Relief Activities, Assignments as of April 29, 1999 (NPA Relief Activities) (indicating that of approximately 100 recent and pending area code relief activities, 80 are or will be splits). This document is available at <http://www.nanpa.com/number_resources_info/assignments.html>.

[201] Where a community of interest contains portions of two or more NPAs, a particular NXX code that has been assigned for use within one of the NPAs is "protected," or made unassignable in the adjacent NPA. This permits every switch in the local calling area to route calls based on the NXX code, rather than the NPA-NXX, even across NPA boundaries. In addition, other protected codes are reserved for special services, such as N11 codes. Thus, protected codes are not available for number assignments to end users. NANC Report at §§ 10.5.2 and 10.5.3.1.

[202] NANC Report at § 10.1. *See also* Uniform Dialing Plan (INC 97-0131-017, issued July 1998), at § 6.0. This document evaluates potential uniform dialing plans for the NANP serving area.

protected codes,[203] and potentially through permitting the use of either "0" or "1" as the first digit of an NXX code (the fourth, or "D" digit, of a ten-digit telephone number). Moreover, the adoption of ten-digit dialing on a nationwide basis might eliminate disincentives for states to adopt overlays. To date, we have observed the adoption of ten-digit dialing at the state and NPA levels in conjunction with the use of overlays for area code relief.[204] Furthermore, ten-digit dialing and reclamation of protected codes may be implemented on a national, statewide, or NPA-wide basis.[205] The NANC Report finds that the conversion to ten-digit dialing and the reclamation of protected codes could be implemented within 12 months.[206]

124. *Benefits.* Ten-digit dialing would allow future area code relief projects, particularly overlays, to be less disruptive to consumers.[207] In addition, Bell Atlantic Mobile states that mandatory ten-digit dialing may foster new and different uses for NPA overlays.[208] Moreover, if ten-digit dialing were adopted as part of a national numbering optimization policy, customer confusion resulting from inconsistencies in dialing patterns from one area to another would be eliminated.[209] PageNet also believes that ten-digit dialing would lower costs and reduce entry barriers, which, in turn, could result in lower prices and increased product

[203] We note that protected codes, which are a deviation from standard dialing patterns, may be reclaimed without regard to whether mandatory ten-digit dialing is implemented. In fact, the NANC recommends that protected codes should be eliminated or reduced to "an absolute minimum." NPA Code Relief Guidelines at § 5.0.

[204] Atlanta, Denver, Houston, Maryland and Miami have completed the conversion to ten-digit dialing. Exchanges in Dallas, portions of Los Angeles, Orlando, and eastern Pennsylvania, are presently in the process of converting to ten-digit dialing also. *See* NPA Relief Activities, *supra* at note 200.

[205] NANC Report at § 10.2.

[206] NANC Report at § 10.3. The respondents to the State Issues Task Force's Service Provider Questionnaire on Ten-Digit Dialing state that conversion to mandatory ten-digit dialing would take three to eight months. *Id.* This time frame would not include the unblocking of the D digit.

[207] NANC Report at §§ 10.5.1 and 10.7.1; Bell Atlantic Mobile comments at 16; PCIA comments at 12; Texas Commission comments at 27.

[208] As an example, Bell Atlantic Mobile suggests that spare NXX codes in NPAs could be shared with neighboring NPAs through a globalized overlay approach. Bell Atlantic Mobile comments at 4.

[209] NANC Report at § 10.5.1.

and service innovation for all consumers.[210] GTE further states that ten-digit dialing will prevent discrimination among service providers.[211]

125. *Disruptive effects.* Ten-digit dialing, however, does present certain disruptive effects, particularly for consumers. Consumers often object to the inconvenience and confusion associated with having to remember and dial three extra digits.[212] Also, some research raises a concern that the young, elderly and the memory impaired may be particularly affected by the change to ten-digit dialing, especially where 911 has not been implemented.[213] Businesses may also incur costs associated with changing advertising and stationery, updating databases, and reprogramming customer premises equipment (CPE).[214] Although the industry cost of implementing this measure will vary according to each geographic area and service provider, some carriers could experience substantial costs associated with modifications to switch translations and OSS, directory publishing, changes to announcement systems, and customer education.[215] Implementation of ten-digit dialing will also require upgrades to the Public Safety Answering Point (PSAP) system.[216] In light of these concerns, we seek further information on any other technical problems and costs associated with these measures. In particular, we seek comment on whether the ability to implement easily area code overlays could provide a disincentive to use existing resources more efficiently.

126. *National policy.* The majority of industry commenters support the conversion to mandatory ten-digit dialing as a numbering optimization measure, particularly in densely populated areas with NPAs that are projected to exhaust shortly.[217] Some commenters,

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[210] PageNet comments at 10.

[211] GTE comments at 7.

[212] NANC Report at § 10.8.2. Customer education concerning the change in dialing pattern would be necessary.

[213] NANC Report at § 10.8.2; CVSI comments at 3.

[214] NANC Report at §§ 10.4.1 and 10.8.2.

[215] NANC Report at §§ 10.4 and 10.4.1.

[216] NANC Report at § 10.9. The PSAP is a centralized answering point for emergency calls that serves a prescribed geographic area.

[217] AirTouch comments at 19; Ameritech comments at 12; Bell Atlantic comments at 2; BellSouth comments at 17; GTE comments at 7; Madison comments at 3; Nextel comments at 15; PCIA comments at 12; PrimeCo comments at 7; SBC comments at 24; Sprint comments at 37; USTA comments at 2-3.

however, explicitly reject the adoption of this measure.[218] The states also are divided in their embrace of this measure. For example, the Texas Commission supports an investigation into the costs and benefits of mandatory ten-digit dialing as a numbering optimization measure.[219] Similarly, the Florida Commission states that mandatory ten-digit dialing would open the possibility for new types of area code overlays, including expanded overlays.[220] The Ohio Commission argues that alternatives such as eight-digit uniform dialing and functional property codes have not been fully considered, and that these methods may be used to improve numbering utilization and postpone costly area code relief measures,[221] while the New York Commission points out that ten-digit dialing is not required to reclaim protected NXX codes.[222] We seek comment on whether we should adopt nationwide ten-digit dialing, or whether we should encourage states to implement ten-digit dialing as a priority.

127. *D digit expansion.* Expansion of the NANP so-called "D" digit (the fourth digit of a ten-digit telephone number) to include 0 and 1 could accompany the implementation of ten-digit dialing.[223] Adoption of this measure would increase the quantity of NXXs available within an NPA by approximately 25%.[224] The NANC Report states that D digit expansion must be done simultaneously by all participants in the NANP because otherwise calls can not be completed to exchanges where carriers continue to retain the D digit for internal use.[225] We seek comment on whether D digit expansion may be implemented on a statewide or NPA-wide basis, rather than at a mandatory national level by all service

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[218] *See* CVSI comments at 3-4. CVSI also argues that ten-digit dialing is only a *de minimis* conservation measure with substantial public costs and social undesirability. *See also* MCI WorldCom comments at 27 (stating that ten-digit dialing provides no number conservation benefits).

[219] Texas Commission comments at 27.

[220] *See* Florida Commission comments at 4.

[221] Ohio Commission comments at 7.

[222] New York Commission comments at 12-13. *See also* MCI WorldCom comments at 27 (ten-digit dialing is not necessary to release protected NXX codes).

[223] NANC Report at § 10.1. NXX codes that begin with 0 and 1 are restricted by industry agreement and are used for switches to access operators, toll dialing and/or inter-NPA calling. NANC Report at § 10.5.2.2. In order for these restricted NXX codes to be available for assignment, ten-digit dialing must be present. *Id.* We note that the expansion of the D digit measure is presently under study by INC. *See* INC Issue Number 159, submitted Jan. 25, 1999. This document is available at <http://www.atis.org/atis/clc/inc/incissue.htm>

[224] NANC Report at § 10.5.2.2.

[225] NANC Report at § 10.7.2.2.

providers. The NANC Report also states this modification is expected to be a multi-year process for carriers to implement, and therefore, expansion of the D digit would be implemented as the final phase of the measures associated with ten-digit dialing.[226]

128. *Disruptive effects of D digit expansion.* D digit expansion, however, raises significant implementation concerns. The record reveals that implementation of this measure will require significant and costly technical modifications to switches, operations support systems, and customer premises equipment.[227] Moreover, since service providers may be using these NXXs for intra-network use, they will need to develop an alternate technical solution.[228] Furthermore, a call may not be completed if this measure is not implemented by all service providers in a timely manner.[229] MCI WorldCom further asserts that adoption of this measure would preclude significant options for long-term expansion of the NANP.[230]

129. *National policy.* We note that most commenters who addressed this issue oppose the expansion of the D digit because of implementation concerns.[231] One commenter also recommends that the Commission preclude states from requiring the expansion of the D digit to preserve national flexibility to devise long-term alternatives for NANP expansion.[232] Therefore, we seek further comment on the costs and benefits of expanding the D digit, and on whether we should mandate the adoption of this measure at the national level to ensure its effectiveness. We also seek comment on whether states should independently implement the expansion of the D digit as a numbering optimization measure at the present time.

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[226] NANC Report at §§ 10.2, 10.3, and 10.7.2.1.

[227] NANC Report at § 10.6.1.3; AT&T comments at 14-15; MCI WorldCom comments at 13-14; *see also* Letter to FCC from Brian Baldwin, dated March 12, 1999 (Ameritech March 12, 1999, *ex parte*). Ameritech specifies that the operating systems applications that would be affected by D digit expansion include inward operator routing, calling cards, wireless ESRDs, and test lines, etc. *Id.*

[228] NANC Report at § 10.6.1.3; Ameritech March 12, 1999, *ex parte.*

[229] NANC Report at § 10.7.2.2.

[230] MCI WorldCom comments at 27. MCI WorldCom states that subsequent expansion of the NANP to 12 digits would be affected.

[231] *See, e.g.*, MCI WorldCom comments at 28.

[232] MCI WorldCom comments at 27.

## C. LNP-Based Solutions: Number Pooling

### 1. Background

130. Telephone number pooling addresses one of the causes of area code exhaust: the allocation of numbers in full central office code (NXX) blocks of 10,000. Historically, network routing mechanisms are based upon the understanding that geographic numbers are assigned on an NXX code basis and associated with a specific switch, and, correspondingly, that the network address to which the call must be routed is embedded in the first six digits (NPA-NXX) of the called number. Number pooling allows service providers in a given area to receive numbers in blocks smaller than 10,000 by breaking the association between the NPA-NXX and the service provider to whom the call is routed. Through number pooling, participating carriers can effectively share resources from NXX codes rather than receiving an entire NXX code at a time.

131. Once the association between the NPA-NXX code and the service provider is broken for purposes of call routing, an alternative to using the first six digits of the called number to route the call must be found. One alternative would be to perform seven-digit (NPA-NXX-X) or greater screening within each switch on calls to pooled numbers.[233] The industry consensus view is that this method of call routing would be costly to implement, administratively burdensome and would result in an inefficient use of switch memory.[234] The Location Routing Number (LRN) infrastructure supporting LNP provides a second, arguably more practical, alternative routing method.[235]

132. Under the LRN method, a unique ten-digit number -- the "location routing number" or LRN -- is assigned to each central office switch to identify each switch in the network for call routing purposes.[236] The LRN then serves as a network address. When an individual telephone number is ported, a record associating the ported number with the LRN of the appropriate service provider's switch is created and stored in the former carrier's LNP service control point (SCP) database, via downloads from the local Service Management

[233] *See* NANC Report at § 5.1.2.

[234] *See* INC Initial Report to the NANC on Number Pooling, June 1998 Revision, n.3. (INC Number Pooling Report).

[235] *See* INC Number Pooling Report at § 5.1.

[236] *See generally* Telephone Number Portability, *Second Report and Order*, 12 FCC Rcd at 12287.

System (SMS).[237] Any service provider routing a call to the ported number would do so by querying the database to determine the LRN that corresponds to the dialed telephone number, and routing the call to the switch identified by that LRN.

133. The LRN database structure can also be used to route calls to customers who have been assigned telephone numbers from a pool, because, just like with ported numbers, the NPA-NXX of a pooled number no longer necessarily indicates the switch or service provider associated with the service. To facilitate call routing when LRN LNP is utilized for number pooling, the entire population of pooled numbers in the pooling area, and associated LRNs, must be stored in all of the LNP SCP databases that service providers use to store LRN information for numbers ported from their networks.[238] Thus, number pooling can only be implemented where LRN LNP has been deployed.

134. The NANC Report proposed two different types of pooling: thousands-block pooling, in which carriers receive numbering resources in blocks of 1,000, and individual telephone number (ITN) pooling, in which carriers receive telephone numbers one at a time.[239] In addition, the NANC proposed a numbering optimization method known as unassigned number porting (UNP).[240] Although not technically a pooling method because carriers receive numbering resources from each other, rather than from a common pool overseen by a pooling administrator, the method is somewhat similar to ITN in that individual numbers are ported using the same network infrastructure (LNP) to route calls.

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[237] An SMS is a database or computer system not part of the public switched network that, among other things: (1) interconnects to an SCP and sends to that SCP the information and call processing instructions needed for a network switch to process and complete a telephone call; and (2) provides telecommunications carriers with the capability of entering and storing data regarding the processing and completing of a telephone call. *Telephone Number Portability First Report and Order*, 11 FCC Rcd at 8402 n.288. An SCP is a database in the public switched network that contains information and call processing instructions needed to process and complete a telephone call. The network switches access an SCP to obtain such information. Typically, the information contained in an SCP is obtained from the SMS. *Id.*

Local SMSs (LSMSs) are the databases that carriers will regularly access to obtain information on ported telephone numbers. The Number Portability Administration Center (NPAC) SMSs are the regional databases maintained by the local number portability administrators, which contain the lists of ported telephone numbers and associated LRNs. These lists of ported numbers and LRNs are periodically transmitted from the NPAC SMSs to the LSMSs, and then downloaded to network SCPs for call processing. *Telephone Number Portability Second Report and Order*, 12 FCC Rcd at 12288 n.9.

[238] *See* NANC Report at § 5.6.1. *See also* INC Number Pooling Report at § 5.3.

[239] NANC Report at §§ 4 and 5.

[240] *Id.* at § 6.

135. Initially, proposed pooling methodologies would be confined to a rate center, which denotes the smallest geographic area used to distinguish rate boundaries.[241] That is, each rate center would contain a separate pool of numbering resources. In this manner, current wireline call rating mechanisms associating an NXX with a particular geographic area (i.e., rate center) can be maintained. Pooling, however, could be extended beyond the rate center if methods to eliminate the link between call rating and NXX codes using the SS7 network, as discussed in Section V.B.1., were implemented.

136. *Thousands-block pooling.* Thousands-block pooling involves the allocation of blocks of sequential telephone numbers within the same NXX code to different service providers, and possibly different switches, within the same rate center. All 10,000 numbers available in the NXX code are allocated within one rate center, but are allocated to multiple service providers in thousand-number blocks, instead to one particular service provider.[242] Allocations are accomplished via a Pooling Administrator, who coordinates the allocation of numbers to a particular service provider with the Number Portability Administration Center (NPAC) SMS.[243]

137. To implement thousands-block pooling, the industry has proposed employing the Intelligent Network/Advanced Intelligent Network (IN/AIN) system used for LNP. Use of this external database system for number pooling is described in detail as the NXX-X/LRN method in the INC Number Pooling Report.[244] As noted above, to facilitate proper network routing in a thousands-block pooling environment, every service provider's existing LNP SCP database within the pooling area would store specific LRN routing information for thousand-number blocks within the same NXX. In addition, each service provider's LNP mechanisms would query their database for calls to pooled numbers allocated to other service providers.[245]

138. With little exception, parties commenting on the LRN-based methods of numbering optimization strategies agree that a nationwide thousands-block pooling

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[241] *See* Thousand Block Pooling Guidelines at § 1. *See also* discussion *supra* Section V.B.1.

[242] For example, if the 202-418 NPA/NXX were pooled, up to ten service providers could serve customers from it. One service provider could be allocated every line number from 202-418-0000 through 202-418-0999. Another service provider could be allocated every line number in the range 202-418-1000 through 202-418-1999.

[243] The NPAC SMS is a database that contains all necessary routing information on ported telephone numbers and facilitates the updating of the routing databases of all subtending service providers in the portability area. *See* Thousand Block Pooling Guidelines at § 14.

[244] *See* NANC Report at § 5.1.3; *see also* INC Number Pooling Report at § 11.

[245] *See supra* ¶ 132.

architecture could make more efficient use of NXX codes already allocated and those awaiting allocation.[246] Given the potential benefits of a nationwide pooling architecture, we tentatively conclude that implementing thousands-block pooling in major markets is an important numbering resource optimization strategy that is essential to extending the life of the NANP. In this section of the Notice, we seek comment on how thousands-block pooling should be implemented. We believe that carriers should be required to participate in pooling in areas where the benefits of pooling outweigh the associated costs. We seek comment on how best to achieve this goal.

139. *Individual telephone number pooling and unassigned number porting.* Similarly, individual telephone number (ITN) pooling and unassigned number porting (UNP) involve the allocation of individual telephone numbers within the same NXX to different service providers, and possibly different switches, within the same rate center. As with thousands-block pooling, all 10,000 available numbers in an NXX code are allocated within one rate center, but individual telephone numbers may be allocated to different service providers. With ITN pooling, allocations would be accomplished via a Pooling Administrator, to coordinate the allocation of individual numbers to a particular service provider with the NPAC. With UNP, however, allocation of individual telephone numbers generally would be accomplished between service providers by using established LNP porting mechanisms, and would not involve a Pooling Administrator.

140. Just as it has been proposed for thousands-block pooling, ITN pooling and UNP would also employ the IN/AIN system used for LNP. To facilitate proper network routing in an ITN pooling environment or with UNP, every service provider's existing LNP SCP database within the rate center would store specific LRN routing information for individual numbers within the same NXX. In addition, each service provider's LNP mechanisms would query their database for calls to individual numbers allocated to other service providers.

141. The NANC Report estimates that four to six years may be required to implement ITN pooling from the date of a regulatory order mandating its implementation.[247] Unlike thousands-block pooling, the state of development of technical standards and administrative guidelines for ITN pooling is not as advanced. For these reasons, we tentatively conclude not to pursue ITN pooling at this time.

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[246] *See* Ameritech comments at 4; AT&T comments at 7; Florida Commission comments at 3; Kentucky Commission comments at 1; MCI WorldCom comments at 19. *But see* BellSouth comments at 1; Ohio Commission comments at 5; U S West comments at 11.

[247] NANC Report at § 4.3.

142. With regard to UNP, we seek comment on whether we should allow carriers to port unassigned numbers among themselves. Short of public safety and network concerns, we see no reason to prohibit the practice where two or more carriers reach a mutual agreement to transfer unassigned numbers among themselves.[248] Some carriers may find the practice useful in extreme situations in which numbering resources may not otherwise be available. We are mindful, however, that porting large blocks of numbers may not be possible for certain types of switches,[249] and may disrupt processing of calls to E911 systems.[250] Therefore, we seek comment on whether allowing carriers to port unassigned numbers among themselves may result in call-routing problems and public safety concerns. We also seek comment on whether state commissions should make the determination to allow carriers to use UNP in a given area.

### 2. Pooling Roll-out

143. *Relation of LNP implementation to thousands-block pooling.* As previously explained, thousands-block pooling relies on the same network architecture that makes LNP possible.[251] The Commission required wireline carriers in the largest 100 MSAs to implement LNP as of December 31, 1998, in switches that another carrier has requested be made LNP capable.[252] Therefore, the degree of deployment of LNP is greatest in switches located within the largest 100 MSAs. As of January 1, 1999, LECs may request LNP in other LECs' individual switches in areas outside of the largest 100 MSAs, to be provided no later than six months after receiving the request.[253] CMRS carriers are not required to deploy LNP until November 24, 2002.[254]

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[248] We note that, in the *Telephone Number Portability Second Report and Order*, we recognized that the NANC recommended that service providers not be allowed to port unassigned numbers absent a specific regulatory authorization. *Telephone Number Portability Second Report and Order*, 12 FCC Rcd at 12319-20.

[249] *See* U S West comments at 14 n.16.

[250] *See infra* ¶¶ 179-181

[251] NANC Report at § 5.1.2.

[252] 47 C.F.R. § 52.23(b)(1).

[253] 47 C.F.R. § 52.23(b)(2)(iv)(C) and (D). For switches that do not require hardware changes or complete replacement, LNP must be offered within 30 days (if the subject switch is a remote switch supported by a host switch equipped for LNP) or 60 days (if the subject switch requires software, but not hardware, changes to support LNP). 47 C.F.R. § 52.23(b)(2)(iv)(A) and (B).

[254] *See CMRS LNP Forbearance Order* at ¶ 1. *See also* discussion *infra* Section V.B.4.

144. Given the deployment schedule for LNP, we tentatively conclude that any deployment schedule for thousands-block pooling should initially be tied to the largest 100 MSAs. This is because it appears that the greatest benefits from pooling are achieved when all, or most, participating carriers are LNP capable, and thus, are able to participate in a pooling methodology.[255] We seek comment, then, on whether it is appropriate to tie initially the deployment schedule for thousands-block pooling to the largest 100 MSAs, or if another deployment schedule should be considered.

145. *Authority to order deployment of LNP for thousands-block pooling purposes.* Currently, our rules specify that only another carrier may request a LEC to provide number portability in a given switch.[256] A key issue in determining the schedule for deployment of thousands-block pooling is the treatment of carriers that may be LNP capable but have not yet implemented LNP in a specific area,[257] and the treatment of carriers that are not now, nor will be for the foreseeable future, LNP capable.[258] We seek comment on whether ordering LNP capability primarily for the purpose of thousands-block pooling is permitted under the 1996 Act. Does this Commission have the authority, and can it delegate to other entities, the authority to order carriers to implement LNP for number utilization purposes?[259] We seek comment on whether an entity other than a LEC could be permitted to request that a specific switch or group of switches be made LNP capable for the sake of providing thousands-block pooling within or without the largest 100 MSAs. It appears from the record received on the NANC Report as well as in other petitions filed with this Commission, that several state commissions are interested in the possibility of ordering number pooling in areas outside the largest 100 MSAs.[260] Therefore, we also request comment on whether requests that a carrier become LNP capable could be made by an entity other than another LEC, such as a state commission, for areas outside the largest 100 MSAs. Because of the expense involved in converting switches to provide LNP capability, we also seek comment on whether the criteria for requesting LNP capability in a given switch or switches for the purpose of implementing

[255] NANC Report at § 5.10.2; *see also* Number Utilization Study at 21; California Commission comments at 6.

[256] 47 C.F.R. § 52.23(b)(1).

[257] California Commission comments at 6.

[258] *See infra* Section V.C.4.

[259] *But see* Nextel comments at 7 (stating that this Commission must assert plenary federal jurisdiction to establish nationwide standards that require carriers to implement specific technologies).

[260] *See, e.g.*, Maine Public Utilities Commission Petition for Additional Delegated Authority to Implement Number Conservation Measures, NSD File No. L-99-27, CC Docket No. 96-98, filed March 19, 1999, at 8.

number pooling should be more stringent than the criteria for requiring an already LNP-enabled switch or switches to participate in thousands-block pooling.[261]

146. *Who decides whether to implement pooling in a given area.* As we have tentatively concluded that thousands-block pooling should be implemented where the benefits of doing so outweigh the costs, we seek comment, first, on what entity should be tasked with making the decision whether to implement pooling in a given area. For example, we could simply order that LNP-capable carriers engage in thousands-block number pooling in the largest 100 MSAs, on the basis that LNP is most widely deployed in those areas, and they are also likely to be subject to the majority of area code relief proceedings. On the other hand, we could delegate the decision to state utility commissions, which could order thousands-block pooling in any area, pursuant to a determination that the costs of ordering pooling are outweighed by the benefits.

147. In the alternative, we seek comment on whether state utility commissions (or another entity) could make the decision to opt into a nationwide thousands-block pooling architecture on a regional basis, or opt out of a "default" nationwide roll-out of pooling. Based on the proximity of state utility commissions to area code exhaust problems, we seek comment on whether a regime such as that which currently exists in the area of area code relief is more desirable.[262] That is, should we allow state utility commissions to elect to make the decision whether to opt in or out of thousands-block pooling, but provide that, if the commission elects not to make the decision, another entity decides whether an area should opt in or out of thousands-block pooling? We further seek comment on what entity should decide whether to deploy pooling in an area, if the state commission declines to do so. Regardless of whether the paradigm is one of opting into a nationwide pooling methodology, or opting out of a roll-out based on the top 100 MSAs, and regardless of whether a state utility commission or some other entity makes the decision to opt in or out of thousands-block pooling, certain criteria would have to be met to justify the decision. We are concerned, however, that a state-by-state assessment of the value of number pooling may understate the overall value of number pooling to the life of the NANP, because state commissions are likely to be primarily interested in extending the lives of individual NPAs within their states, rather than the overall life of the NANP.

148. *Criteria to justify a mandate of pooling in a given area.* Ordering pooling in an area should be guided by the decision that the benefits of doing so will outweigh the costs.

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[261] *See* Ameritech comments at 11; Teligent comments at 4.

[262] *See* 47 C.F.R. § 52.19(a) and (b)(1) (permitting state commissions to resolve matters involving the introduction of area codes within their states, but requiring the NANPA to undertake this function in the event the state commission does not notify the NANPA that it will perform the area code relief planning).

Certain costs of pooling, such as establishing the Pooling Administrator, will necessarily be nationwide in nature, and generally, fixed. Other costs, however, particularly the costs to individual carriers to update their OSS and switches to support pooling, will be more local in nature. Although it will be difficult to determine with precision whether the benefits of an area's participation in pooling in avoiding area code exhaust, and the benefits to the country as a whole of avoiding exhaust of the NANP, outweigh the costs to carriers, and ultimately to their customers, we propose that certain criteria be met to justify a mandate of pooling in an area, or, to relieve an area from a pooling mandate. We seek comment generally on what those criteria should be. In comments on the NANC Report, certain parties proposed possible factors that would justify an order of thousands-block pooling.[263] Based on those responses and the criteria in the NANC Report under the heading "Conditions Which Support Maximum Potential,"[264] we seek comment specifically on a number of areas.

149. Because thousands-block pooling provides little benefit in situations where there is little or no competition within a rate area,[265] one criterion for opting in or out of pooling in a given area may be the number of competing service providers in the area, and the number of service providers likely to compete in the near future. In addition, the number of LNP-ready service providers in the rate center would also be related to the total number of service providers.[266] If there are a number of service providers, but they are primarily CMRS or paging providers, there may be little gain from number pooling, at least for the immediate future, because CMRS providers are not required to implement LNP until November 2002, and paging providers are not required to implement LNP at all.[267] Similarly, certain types of telephone company switches may not be able to accommodate thousands-block pooling.[268] We seek comment on what would be a reasonable number of LNP-ready service providers using numbering resources in a given area to justify requiring pooling in the area.

150. Another criterion that may weigh in the decision to require pooling in an area is the stage of exhaust of the NPA in which pooling is to take place. The NANC Report notes that thousands-block pooling is likely to provide the greatest benefit when there are

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[263] *See, e.g.*, USTA comments 4-5; California Commission comments at 7-8.

[264] NANC Report at § 5.10.2.

[265] *See* NANC Report at § 5.10.2.

[266] USTA comments at 4.

[267] *See* discussion *infra* Section V.C.4, regarding non-LNP capable carriers.

[268] U S West states that it would not be able to accommodate thousands-block pooling in either its Nortel DMS-10 or Lucent 1AESS switches. U S West comments at 14 n.16.

sufficient numbering resources still available in the NPA to "stock" the pools.[269] If there are few numbering resources remaining in an NPA, pooling may do little or nothing to extend the life of the NPA.[270] Thus, we seek comment on whether a criterion for opting in or out of a thousands-block pooling methodology should be the number of NXXs that remain in an NPA, or the expected number of thousands blocks to be returned within an NPA pursuant to a pooling plan.[271] That is, although few NXXs may remain for assignment, if a large number of already assigned NXXs have low utilization rates, and thus are subject to reclamation, then there may be significant benefits to pooling even in an NPA nearing exhaust. Consideration of this criterion does not preclude a mandatory reclamation of numbers if it is found that service providers have built excessively large inventories of numbering resources.

151. Several parties have observed that the greatest utility to be gained from thousands-block pooling exists when that measure is combined with a rate center consolidation.[272] Consolidating rate centers prior to pooling would likely lead to fewer, larger pools within an NPA, thereby increasing the effectiveness of thousands-block pooling. Because thousands-block pooling exists at the rate center level, however, it may be problematic for an area to undergo rate center consolidation while implementing thousands-block pooling.[273] Similarly, consolidating rate centers following pooling implementation will require consolidation of the pools within the NPA. We seek comment on whether a criterion for opting in or out of thousands-block pooling should be an on-going or planned effort to consolidate rate centers within an NPA.

152. Several state utility commissions have studied the effects that ordering thousands-block pooling would have on the lives of existing NPAs.[274] We seek comment on

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[269] *See* NANC Report at § 5.3.1.2 (stating that a determination of the number of NXXs remaining in an NPA is necessary prior to implementing pooling within a particular NPA to determine whether sufficient numbering resources exist to create a numbering pool).

[270] *See, e.g.*, Ohio Commission comments at 5 (citing Ohio Commission analysis that applying thousands-block pooling to the 216 and 614 NPAs prior to their splits would have provided less than a six-month extension to the life of either NPA).

[271] *See* discussion *infra* Section V.D.2.

[272] AT&T comments at 3; BellSouth comments at 16; NASUCA comments at 4; *see also* discussion *supra* ¶ 121.

[273] Bell Atlantic comments at 10.

[274] *See, e.g.*, Ohio Commission comments at 4-5; Colorado Commission comments at 2; Florida Commission comments at 2-3; Texas Commission comments at 18-23; Illinois Commission Pooling Trial Report, Dockets 97-0192197-0211 (Dec. 8, 1998).

whether the decision to opt in or out of a nationwide thousands-block pooling methodology should be based on detailed studies of the effectiveness that pooling would bring to a particular NPA or NPAs. If detailed studies incorporating some or all of the criteria outlined above are ordered, then we seek comment on whether we should designate the entity that will perform the studies. Furthermore, if we do so, we seek comment on who the entity should be.

153. Finally, we invite commenting parties to suggest any other criteria that may favor a mandate of thousands-block pooling in a given area.

154. *Relevant areas in which to adopt thousands-block pooling.* We seek comment on the relevant areas for opting into, or out of, a nationwide thousands-block pooling methodology. Due to the deployment of LNP, generally, in the largest 100 MSAs, we seek comment on whether the initial deployment of thousands-block pooling, like the LNP implementation schedule, should be limited to the largest 100 MSAs, with extension to other areas following the initial deployment. We also seek comment on whether the implementation should be staggered, like the LNP implementation schedule, to include the largest MSAs in the first group, with implementation in smaller MSAs later. We also seek comment on whether, if the paradigm is one of opting into, rather than out of, a nationwide thousands-block pooling methodology, pooling should be required in the entire MSA, on an NPA-wide basis, or on a rate-center-by-rate-center basis. Similarly, if the default implementation plan calls for pooling in the largest 100 MSAs with the possibility of opting out of the pooling plan, should the appropriate areas from which to opt out be based on an entire MSA, an NPA within the MSA, or on a rate-center by rate-center basis?

### 3. Implementation Time Frame

155. Of the two LNP-based number pooling alternatives addressed in the NANC Report, ITN and thousands-block, the NANC believes that thousands-block pooling can be implemented in a shorter time frame.[275] The actual time needed to implement thousands-block pooling, however, is dependent on a number of variables. The extent of LNP deployment, the provisioning method chosen, compatibility of service providers operational support systems, selection of a Pooling Administrator, and the need for enhancements to switches, SCPs, and other service provider systems, and availability of necessary hardware and software changes from vendors, all affect the time frame for implementation of thousands-block pooling.

156. The NANC Report includes an implementation timeline for thousands-block pooling. This timeline identifies the high-level tasks that must be accomplished to implement

[275] *See* NANC Report, Executive Summary dated Sept. 23, 1998, at 2.

thousands-block pooling, as well as the estimated time and the party responsible for accomplishing each task.[276] Several pre-pooling activities, such as deployment of LNP and analysis of current and future numbering needs, are already underway. The pooling administration tasks identified by the NANC Report include: development of Pooling Administration guidelines; selection of a Pooling Administrator; and development by the Pooling Administrator of an automated system for allocation of pooled number resources, built according to industry-supplied specifications and requirements. Of these tasks, the Thousands Block Pooling Guidelines are largely completed.

157. The NANC Report further identifies the selection of a pooling deployment method -- port-on-demand, pre-port, or activate-as-needed[277] -- as the first critical technical task. The industry selected the pre-port methodology with Efficient Data Representation (EDR), a data formatting method that facilitates the transfer of large ranges of numbers as a single message.[278] Other technical tasks include development and deployment of enhancements to the NPAC SMS to accommodate pooling, development of switch requirements, and system testing. The NANC Report also sets forth a number of tasks that service providers, together with equipment vendors, must accomplish to achieve number pooling. These tasks include: modifications to service provider LSMSs and SCPs; enhancements to Service Order Administration systems (SOAs) and operations support systems; and enhancements to switches, and subsequent testing.

158. Although each of these tasks will take a different amount of time to complete, the NANC Report estimates that all of them may be achieved, and thousands-block pooling could be implemented, within 10 to 19 months from a regulatory order.[279] We seek comment on whether the estimated time allotted to each of the major tasks involved in implementing thousands-block number pooling is necessary, or, on the other hand, is sufficient, to ensure the proper implementation of thousands-block number pooling.

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[276] *See* NANC Report at § 5.3.

[277] Port-on-demand is a pooling deployment method by which numbers within blocks allocated to a specific service provider are ported only at the time they are actually assigned or reserved for a customer. Using the pre-port method, all numbers within blocks allocated to a service provider are ported when they are allocated to the service provider, so that they may subsequently be assigned to customers in the same manner as other numbers within the service provider's inventory. The activate-as-needed method allows numbers to be ported at the time allocation is made to the service provider, or at the time they are actually assigned or reserved for a customer, or anytime in between. *See* NANC Report at § 5.1.3.

[278] *See* NANC Meeting Minutes, Aug. 19-20, 1998.

[279] *See* NANC Report at § 5.3.3.

### 4. Non-LNP-Capable Carriers

159. As we have noted above, because thousands-block pooling and other pooling methods are based on LRN architecture, carriers who have not deployed LRN architecture to support LNP cannot participate in number pooling. Assuming that we were to adopt some form of pooling requirement for LNP-capable carriers, we must also consider how the implementation of pooling would affect non-LNP-capable carriers. In this section, we seek comment on whether the need to promote efficient use of numbering resources requires non-LNP-capable carriers to participate in pooling, the relative costs and benefits of extending pooling requirements to such carriers, and whether there are viable non-LNP based alternatives to pooling that would promote the efficient use of numbers by non-LNP based carriers.

160. For purposes of this inquiry, non-LNP-capable carriers can be divided into three categories: (1) "covered" CMRS carriers[280] in the largest 100 MSAs, who are not currently LNP-capable, but will be required to implement LNP by a date certain; (2) wireline and "covered" CMRS carriers outside the largest 100 MSAs, who will be required to deploy LNP in the future only if and when they receive a request from a competing carrier;[281] and (3) non-"covered" CMRS providers, such as paging carriers, who are not subject to LNP requirements of any kind. We address the issue of number pooling as it affects each category in turn.

161. With respect to the first category, we recently decided in the *CMRS LNP Forbearance Order* that covered CMRS providers would be required to implement LNP in the largest 100 MSAs by November 24, 2002.[282] Once that has occurred, it presumably will be feasible for these carriers to participate in thousands-block number pooling on the same or an equivalent basis as wireline carriers in the largest 100 MSAs that have already developed

[280] The term "covered CMRS" refers to broadband Personal Communications Service (PCS), cellular, and 800/900 MHz Specialized Mobile Radio (SMR) licensees that (1) hold geographic area licenses or are incumbent SMR wide area licensees, and (2) offer real-time, two-way switched voice service, are interconnected with the public switched network, and utilize an in-network switching facility that enables such CMRS systems to reuse frequencies and accomplish seamless hand-offs of subscriber calls. 47 C.F.R. § 52.21(c).

[281] As discussed below, the CMRS LNP requirements for the largest 100 MSAs also require covered CMRS carriers outside the largest 100 MSAs to support roaming by CMRS customers from the largest 100 markets who use ported numbers. *See* 47 C.F.R. § 52.31(a)(2). Thus, CMRS carriers outside the largest 100 MSAs will be required to make certain LNP-related changes to their networks to support roaming even if they do not receive a request to provide LNP to customers in their home market. These changes, however, are not as extensive as those that would be required to implement LNP for their own customers, or to participate in number pooling.

[282] *CMRS LNP Forbearance Order* at ¶¶ 1, 39.

LNP capability. Accordingly, we believe that once covered CMRS carriers are LNP capable, they should be equally subject to any pooling requirement that we may adopt for LNP-capable wireline carriers.[283] We seek comment on this proposal.

162. In the *CMRS LNP Forbearance* proceeding and this proceeding, CMRS carriers have generally asserted that their participation in number pooling would have less impact on efficient number utilization than participation by other carriers. Among the reasons asserted are: (1) CMRS carriers would have few, if any, numbers to contribute to pools because these carriers have high utilization rates;[284] (2) because CMRS carriers use only a limited number of rate centers, their pooled numbers would be available for wireline assignment only in those rate centers, instead of area-wide;[285] (3) because CMRS carriers experience rapid subscriber growth, it is more efficient for wireless carriers to be assigned an entire NXX, rather than multiple thousands blocks, to meet short-term needs.[286]

163. On the other hand, some state regulators have urged the Commission to consider applying pooling requirements to CMRS carriers.[287] These states contend that the participation of CMRS carriers in pooling is important because, even if CMRS carriers have high utilization rates that would prevent them from contributing large amounts of numbers to a pool, the ability of CMRS carriers to draw numbers from the pool, rather than requiring separately allocated NXX blocks, would enhance the effectiveness of pooling as a numbering optimization measure.[288]

164. The issue of CMRS participation in number pooling is also the subject of data provided by the NANPA, in the *CMRS LNP Forbearance* proceeding and in a subsequent presentation to the NANC.[289] In these submissions, the NANPA has presented several alternative projections of the potential impact of thousands-block number pooling on NANP

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[283] *See also* discussion *infra* ¶ 167.

[284] *See, e.g.*, AirTouch comments at 7; AT&T comments at 19-21; Bell Atlantic Mobile comments at 7.

[285] *See, e.g.*, AirTouch comments at 7; AT&T comments at 19-21.

[286] *See, e.g.*, AirTouch comments at 7; Bell Atlantic Mobile comments at 7.

[287] *See, e.g.*, Kentucky Commission comments at 2; North Carolina Commission comments at 3.

[288] *See, e.g.*, Letter from Lawrence G. Malone, General Counsel, New York Commission, to William E. Kennard, Chairman, FCC, dated Dec. 10, 1998 (New York Commission December 10, 1998, *ex parte*), filed in WT Docket No. 98-229 and CC Docket No. 95-116.

[289] *See CMRS LNP Forbearance Order* at ¶¶ 43-44; Number Utilization Study at 8, 20-21.

exhaust that vary depending upon whether CMRS participation in pooling is assumed. Specifically, the NANPA estimates that if thousands-block pooling were implemented in the year 2000 by all wireline, CMRS, and paging carriers, the life of the NANP would be extended until 2051, or even longer if the pooling program included reclamation of existing NXX codes.[290] In an alternative projection, the NANPA estimates that implementation of pooling by wireline carriers alone (*i.e.*, with no CMRS participation) would extend NANP life until 2027.[291]

165. We seek comment on the assertions of CMRS carriers and state regulators regarding the potential numbering resource optimization benefits that would flow from covered CMRS participation in thousands-block number pooling. We also seek comment on the projections presented by the NANPA concerning the comparative impact on NANP exhaust depending on whether pooling includes or does not include CMRS participants.[292] We recognize that the NANPA's projections have been criticized by some carriers,[293] and that the NANPA has indicated that its efforts to project the impact of pooling on NANP exhaust are ongoing.[294] Nevertheless, we believe that careful review and further analysis of the NANPA's number exhaust projections are essential to our evaluation of the issue of pooling participation by different industry segments. We commend the NANC for initiating this process by establishing a team to review the NANPA's projections in detail and submit its findings to the NANC.[295] We encourage the NANC to submit any conclusions or recommendations that it may have regarding pooling, including pooling by CMRS carriers, based on the NANPA's projections or the team's findings. We also urge all participants in this proceeding to consider and comment on the Number Utilization Study and NANP Exhaust Study and any responses to the report as they pertain to CMRS participation in pooling.

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[290] *See* Number Utilization Study at 21.

[291] *See* Number Utilization Study at 21.

[292] *See* Number Utilization Study and NANP Exhaust Study.

[293] *See, e.g.*, Letter from Lincoln E. Brown, SBC Communications, to Magalie Roman Salas, FCC, dated April 21, 1999, Attachment at 2 (SBC April 21, 1999, *ex parte*).

[294] The NANPA has indicated that its Number Utilization Study, which was submitted to NANC on Feb. 18, 1999, is preliminary and that its NANP Exhaust Study, which was submitted to NANC on April 22, 1999, does not incorporate the 1999 COCUS. *See* NANC Meeting Minutes, Feb. 17-18, 1999, at 12; NANP Exhaust Study at 1-4.

[295] The team was established at the Feb. 17-18, 1999, NANC meeting. *See* NANC Meeting Minutes, February 18-19, 1999. On May 3, 1999, the team issued its findings. *See* Report of the NANP Exhaust Team, May 3, 1999.

166. If we were to extend thousands-block pooling requirements to covered CMRS providers, we seek comment on whether such requirements should be limited to specific NPAs or rate centers or whether they should apply to all NPAs located in the largest 100 MSAs. We also seek comment on the potential cost to covered CMRS providers if they are subject to pooling requirements. Assuming that they will have already incurred the cost of implementing LNP, what additional cost would be required to implement number pooling? Commenters should specifically address and, if possible, provide documentation of the incremental costs that would be incurred over and above the cost of LNP deployment.

167. We also seek comment on the timeframe that would be required for implementation of number pooling by covered CMRS providers following LNP deployment. As noted above, the NANC has estimated that deployment of thousands-block number pooling by wireline carriers that have already deployed LNP could occur within 10 to 19 months of a regulatory order establishing pooling requirements.[296] This estimate, however, is based in part on the estimated time required to select a pooling administrator and establish administrative procedures for the pooling process. Assuming that this process could be completed before the November 2002 deadline for CMRS LNP deployment, covered CMRS carriers would presumably not require as lengthy a time interval to initiate pooling, because the administrative infrastructure for pooling would already be in place. We seek comment on this assumption, and on the ability of covered CMRS carriers to participate in decisions regarding number pooling administration prior to their development of LNP capability. Commenters should also address whether there are any other technical considerations and administration issues unique to covered CMRS carriers that could affect the timing of their participation in pooling.

168. In the *CMRS LNP Forbearance Order*, we noted that our decision to extend the LNP implementation deadline for covered CMRS providers to November 24, 2002, does not limit our ability to require CMRS participation in pooling at an earlier date, if doing so is deemed necessary to address specific number exhaust problems.[297] Some state regulatory agencies, such as the North Carolina Commission, argue that CMRS participation in pooling prior to November 2002 may be necessary in order for the public to realize the full benefits of pooling.[298] On the other hand, requiring CMRS carriers to participate in pooling earlier than November 2002 would require these carriers to accelerate their deployment of LNP technology, which would impose significant costs and burdens that we have concluded in the *CMRS LNP Forbearance Order* are not warranted for LNP purposes. In light of our decision

[296] *See supra* Section V.C.3.

[297] *CMRS LNP Forbearance Order* at ¶ 48.

[298] *See, e.g.*, North Carolina Commission comments at 3.

to extend the deadline for CMRS implementation of LNP until November 2002, we seek comment on whether there is a need to consider such an accelerated schedule to address specific number exhaust problems. Specifically, commenters should address whether there are potential benefits from CMRS participation in pooling earlier than November 2002 that would be sufficient to justify the significant added cost and burden that would be borne by covered CMRS providers in deploying LNP architecture on an accelerated basis.

169. The second category of non-LNP-capable carriers consists of wireline and covered CMRS carriers outside the largest 100 MSAs, who will be required to deploy LNP at some time in the future only if and when they receive a request from a competing carrier. In the case of wireline carriers outside the largest 100 MSAs, such deployment could occur as early as July 1, 1999, if a request was received by January 1, 1999.[299] In the case of covered CMRS carriers outside the largest 100 MSAs, such deployment would not occur before May 22, 2003, under the timetable established by the *CMRS LNP Forbearance Order*.[300]

170. At present, it is not certain to what degree carriers in this category will be subject to requests to provide LNP in their own markets, or when such deployment will occur. It is unlikely, however, that deployment of LNP outside the largest 100 MSAs will be uniform. For example, in some instances, carriers outside the largest 100 MSAs may be requested to provide LNP only in certain switches, so that they will not necessarily have LNP capability throughout their service areas. It is also possible that widespread deployment of LNP in these markets will occur gradually over an extended period of time. In light of these uncertainties, we seek comment on the degree to which carriers in this category should be required to participate in any pooling regime we may establish for wireline or CMRS carriers in the largest 100 markets. Specifically, should a carrier that establishes LNP capability based on another carrier's request presumptively be required to participate in pooling? Alternatively, are there circumstances under which we should impose pooling obligations on carriers even if they have not received a request for LNP from another carrier?[301] To what extent should pooling obligations apply if the carrier's deployment of LNP is limited to certain switches rather than its entire service area?

171. Another potential factor that could affect the ability of covered CMRS carriers outside the largest 100 MSAs to participate in pooling is the requirement that CMRS carriers

[299] *See* 47 C.F.R. § 52.23(c).

[300] *See* 47 C.F.R. § 52.31(a)(iv).

[301] *See* discussion *supra* ¶ 145

who deploy LNP be able to support nationwide roaming.[302] As a result of this requirement, covered CMRS carriers outside the largest 100 MSAs will need to make certain changes to their networks before November 24, 2002 so that they can support roaming by CMRS customers from the largest 100 markets who use ported numbers. These changes are not as extensive as those that would be required to implement LNP for their own customers, or to participate in number pooling. Nevertheless, we seek comment on whether implementing the network changes required to support roaming would affect the cost to CMRS carriers of implementing pooling, even if such carriers do not receive a request from a competing carrier to deploy LNP in their home markets.

172. The final category of non-LNP-capable carriers consists of wireless carriers outside the covered CMRS definition, who are not required to deploy LNP at all.[303] This category includes, among others, paging carriers, data-only services, and small SMR carriers who fall outside the covered CMRS definition because they do not provide switched-network mobile voice service with seamless handoff of calls. In the *Telephone Number Portability* proceeding, we concluded that these services should not be subject to LNP requirements because LNP implementation by these classes of carriers would have little impact on wireless-wireless or wireless-wireline competition.[304] Some of these classes of carriers, however, particularly paging carriers, are significant users of numbering resources.[305] Therefore, even though they are not subject to LNP requirements, it is important to assess both the potential benefits and the cost of participation by these carriers in number pooling.

173. We seek comment on whether the need for numbering resource optimization warrants the participation in pooling by wireless carriers that are not included in the definition of covered CMRS providers. We recognize that extending pooling requirements to these carriers would impose significant costs and burdens that we have concluded in the *Telephone Number Portability* proceeding are not warranted for LNP purposes. Therefore, we believe that such requirements should not be extended to non-LNP-capable carriers without a

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[302] *See* 47 C.F.R. § 52.31(a)(2).

[303] 47 C.F.R. §§ 52.23, 52.31.

[304] *See Telephone Number Portability First Report and Order*, 11 FCC Rcd at 8352, 8433-38; Telephone Number Portability, *First Memorandum Opinion and Order on Reconsideration*, CC Docket No. 95-116, 12 FCC Rcd 7236, 7272 (1997) (*Telephone Number Portability First Memorandum Opinion and Order*); Telephone Number Portability, *Second Memorandum Opinion and Order on Reconsideration*, CC Docket No. 95-116, 13 FCC Rcd 21204, 21228-31 (1998) (*Telephone Number Portability Second Memorandum Opinion and Order*).

[305] Approximately ten percent of the total NXX code assignments are allocated to paging carriers. Number Utilization Study at 7.

substantial showing that their participation in pooling would have significant numbering optimization benefits that outweigh those costs. We seek comment on whether participation by these carriers in pooling is necessary to achieve our numbering resource optimization objectives.

174. As an alternative, we seek comment on the feasibility of numbering resource optimization methods that would enable non-LNP-capable carriers to participate in or approximate the effect of pooling without requiring them to develop LNP capability. For example, paging carriers currently receive allocations of numbers in thousands blocks through Direct Inward Dialing (DID) agreements. Under DID agreements, ILECs set aside blocks of numbers for paging carriers and route the numbers to them through PBX or Centrex trunks.[306] In some states, wireless service providers receive allocations of numbers in thousands blocks through NXX code sharing arrangements, which are similar to DID agreements, except that they do not involve the use of PBX or Centrex trunks.[307]

175. In addition, the Colorado Commission is considering a proposal that would enable rural LECs to receive numbers in thousands blocks by modifying their switches to query LNP-capable switches ("Colorado Rural LEC Proposal").[308] Under the Colorado Rural LEC Proposal, a small LEC could have, for example, only 400 telephone numbers assigned within the 0000-0999 block of an NPA-NXX, but it would have all 10,000 numbers associated with the NXX allocated to it. Since the numbers 1000-9999 associated with NXX would not be assigned, these numbers could be released to the pool administrator for allocation elsewhere in the rate center. The small LEC's switch could be programmed to handle calls from its own subscribers to telephone numbers in the 0000-0999 block that it retains, including vacant number treatment. The switch could also be programmed to direct calls initiated by the small LEC's own subscribers to telephone numbers in the 1000-9999 number block (which contains nine thousand-number blocks) to an LNP-capable switch, either to obtain the routing information so it could route the call itself, or to have the LNP-capable switch route the call. Calls coming to the LNP-capable switch to numbers that are within the 0000-0999 number block would be sent to the small LEC's switch. Calls to numbers in the

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[306] *See* Telephone Number Portability, *Notice of Proposed Rulemaking*, CC Docket No. 95-116, 10 FCC Rcd 12350, 12369-70 (1995) for a further description of DID. *See also* DICTIONARY OF PC HARDWARE AND DATA COMMUNICATIONS TERMS at <http://www.oreilly.com/reference/dictionary/terms/D/Direct_Inward_Dialing.htm>.

[307] NANC Report at § 15.11.

[308] *See* Colorado Telephone Numbering Task Force Report at § 5.7.1. *See also* letter from James U. Troup, Counsel for Bay Springs Telephone Company, Inc., Roanoke Telephone Company, Inc., National Telephone Company of Alabama, Inc., Crockett Telephone Company, Inc., Peoples Telephone Company, Inc., and West Tennessee Telephone Company, Inc., to Lawrence Strickling, FCC, dated Oct. 27, 1998, at 4 n.8, for a description of a similar method.

1000-9999 number block would be routed using a query to the LNP database to determine the appropriate LRN. We seek comment on the Colorado Rural LEC Proposal, DID agreements, NXX code sharing arrangements, and any other methods that would accomplish the goal of enabling non-LNP-capable carriers to participate in or approximate the effect of pooling without requiring them to develop LNP capability.

176. Finally, to the extent that non-LNP-capable carriers in a market are unable to use an "alternative" pooling method not based on LNP, it will be necessary to continue allocating numbers to these carriers in full NXX blocks while LNP-capable carriers in the same market may draw smaller blocks of numbers from the pool. This will require the establishment of a number allocation method that does not discriminate unfairly in favor of either pooling participants or non-pooling participants. We seek comment on how to establish such an allocation method and what its elements should be. In particular, we seek comment on how requests for numbering resources should be sequenced by the administrator to avoid unfair discrimination in favor of either pooling participants or non-pooling participants.

## D. Pooling Implementation Issues

### 1. Technical Issues

177. *Thousands-Block Number Pooling Standards.* For wireline service providers, the Alliance for Telecommunications Industry Solutions (ATIS) T1S1.6 Working Group on Number Portability (T1S1.6) has developed the technical requirements that define the switch and number portability database requirements for thousands-block number pooling, within a rate area, using the LRN method of number portability.[309] Among other things, this document specifies the network prerequisites that must be met for number pooling to function properly using LRN number portability.[310]

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[309] *See Technical Requirements for Number Pooling (1000s Block) using Number Portability* (Technical Requirements for Number Pooling). The T1S1.6 Working Group, which is part of the American National Standards Institute (ANSI) Accredited Standards Committee-T1 Telecommunications, was created to develop standards and requirements for number portability with the support of the Alliance for Telecommunications Industry Solutions (ATIS). *See* Accredited Standards Committee-T1 Telecommunications Procedures Manual at 21. Committee-T1 documents are available at <http://www.atis.org>.

[310] Technical Requirements for Number Pooling references T1S1.6 Technical Requirements for Number Portability for most of the network functions that are necessary for database and global title translations, operator services switching systems, and switching systems so thousands-block pooling can function properly. *See* ATIS T1S1.6 Working Group, Technical Requirements for Number Pooling at 5. Technical Requirements for Number Pooling, however, specifies a few additional number portability database and global title translation requirements. *Id.* at 16. These draft proposed Technical Requirements were distributed to voting ATIS Committee-T1 members for letter ballot, which closed January 28, 1999. *See* Standards Committee T1 Telecommunications

178. We seek comment on whether we should adopt the T1S1.6 proposed technical requirements for thousands-block pooling as the standard for a national pooling architecture or, in the alternative, whether we should direct the NANC to recommend technical standards for thousands-block pooling once such standards have been adopted by the American National Standards Institute (ANSI). In addition, we seek comment on whether there are any technical issues with respect to thousands-block number pooling that have not been identified, such as potential impacts to private branch exchange equipment, or that remain to be resolved, and whether it is necessary for the Commission to direct or request resolution of these issues.

179. *Public Safety Impacts.* Several entities have expressed concern about thousands-block pooling's impact on the provision of E911 services, and the need for upgrades and changes to E911 systems if pooling is implemented. For instance, the Colorado Commission has identified a potential problem if LNP, rate center consolidation, and number pooling are implemented simultaneously. The Colorado Commission is concerned that, as rate areas become consolidated and more numbers are ported between service providers, there could be routing delays for, or mishandling of, E911 calls.[311]

180. The National Emergency Number Association (NENA), however, in its comments on the NANC Report, states that number pooling is a better option than other numbering resource optimization methods, such as rate center consolidation or inconsistent rate centers.[312] In fact, the impact of thousands-block pooling on E911 systems has been assessed by the 911 Subcommittee of the Illinois Number Portability Workshop.[313] In addition, in Technical Requirements for Number Pooling, T1S1.6 did not specifically identify any impacts on the provision of E911 service associated with the implementation of thousands-block pooling.[314] Significantly, however, in Technical Requirements for Number

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letter to Mr. G.H. Peterson, Chairman, Committee-T1, Lucent Technologies, dated Feb. 1, 1999 (regarding T1 Letter Ballot LB 743, "Draft Proposed Technical Requirements-Number Pooling (1000s Block) using Number Portability"). Voting results and comments have been forwarded to the Committee-T1 Chairman. Upon completion of the procedures for voting, disposition of views and objections, and appeals, the proposed standards shall be submitted to the American National Standards Institute (ANSI) for consideration. *See* Accredited Standards Committee-T1 Telecommunications Procedures Manual at 14.

[311] *See* Colorado Commission comments at 10.

[312] *See* NENA comments at 7.

[313] *See* NANC Report at § 8.1 (Illinois Report on Number Pooling) identifying the impacts of implementing LNP on E911 systems. *See also NENA Recommended Standards For Service Provider Local Number Portability* (NENA-recommended standards).

[314] *See* ATIS T1S1.6 Working Group Technical Requirements for Number Pooling (1000s Block) using Number Portability at 18.

Portability - Switching Systems, T1S1.6 recommends that routing numbers to which E911 calls are translated not be ported. This is because the call-back to a ported number is handled best whenever the call-back is over a dedicated trunk between the Public Safety Answering Point switch and the originating switch.[315]

181. We seek comment, then, on whether the NENA-recommended standards, as well as the T1S1.6 recommended restriction on the porting of E911 routing numbers, are sufficient to ensure the reliable provision of E911 service where thousands-block pooling is implemented. If commenters do not believe they are sufficient, we ask them to describe in detail what additional measures the Commission should take to ensure that calls to E911 are completed accurately and without delay.

### 2. Administration

182. Any nationwide implementation of thousands-block pooling will require detailed guidelines governing its administration. In the areas of administration of the NANP and LNP, certain industry groups, particularly the INC and Committee T1S1, have drafted guidelines and technical specifications that describe, in detail, the procedures to be followed both by administrators and those carriers requesting NANP resources or subject to number portability requirements.[316] We anticipate that a similar type of arrangement will exist in relation to administration of thousands-block pooling. Indeed, the INC has already drafted guidelines relating to the functioning of the Pooling Administrator and entities requesting numbering resources from the Pooling Administrator. We seek comment on whether this arrangement should be the model for thousands-block pooling administration.

183. The INC Guidelines propose a pooling architecture in which a Pooling Administrator functions essentially as another carrier, requesting numbering resources from the NANP in order to maintain a sufficient inventory of thousands blocks for allocation to carriers within a rate area.[317] Carriers desiring blocks of numbers within a rate area request those blocks from the Pooling Administrator, rather than the NANPA.[318] We seek comment on whether this general method of administration satisfies parties that may be taking numbers

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[315] *See* ATIS T1S1.6 Working Group Technical Requirements for Number Portability - Switching Systems at 48.

[316] *See, e.g.*, NPA Assignment Guidelines; CO Code Guidelines; ATIS T1S1.6 Working Group Technical Requirements for Number Pooling (1000s Block) using Number Portability.

[317] *See* Thousand Block Pooling Guidelines at §§ 5 & 8.3.3.

[318] *See* Thousand Block Pooling Guidelines at § 4.

in thousands blocks from a pool as well as those that continue to take whole NXXs,[319] and, in particular, if this model sufficiently addresses concerns about the neutral administration of the numbering resource.

184. *Selecting a Pooling Administrator.* We seek comment on whether the NANPA should serve as thousands-block Pooling Administrator or whether the Commission should seek competitive bids in response to a request for proposal or requirements, as it did with respect to NANP administration.[320] Parties recommending that the Commission seek competitive bids on pooling administration should discuss the advantages of using the competitive bidding process and the specific criteria to be used in selecting a Pooling Administrator. Having determined that thousands-block pooling may appropriately be considered a numbering administration function, the NANC is currently assessing a proposal from the NANPA to add thousands-block pooling administration to its present duties.[321] We tentatively conclude we should ask the NANC for a recommendation regarding what entity should serve as the Pooling Administrator. We seek comment on whether the criteria used by the NANC to evaluate potential Pooling Administrators adequately addresses concerns of the industry, state regulators, and the public.[322] If not, we invite commenters to propose other criteria by which to judge potential Pooling Administrators.

185. Related to the question of who will recommend a potential Pooling Administrator and under what criteria will potential applicants be judged is the matter of the relationship between the Pooling Administrator and the NANPA and LNPA. Although there were two LNPAs initially, now all LNPA functions exist in one entity.[323] If the current NANPA is also chosen as the Pooling Administrator, all nationwide numbering administration functions will be concentrated in one entity. We seek comment on concerns raised by this possible hegemony over all nationwide number administration matters and whether we should seek a different entity to serve as the Pooling Administrator.

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[319] *See* discussion *supra* Section V.C.4.

[320] Administration of the North American Numbering Plan, *Report and Order*, CC Docket 99-237, 11 FCC Rcd 2588, 2616 (1995).

[321] *See, e.g.*, NANC Meeting Minutes, March 16-17, 1999, at 14.

[322] *See* North American Numbering Council (NANC) North American Numbering Plan (NANP) Thousand Block Pool Administrator Requirements Document at § 4 (rev. Jan. 12, 1999). This document is available at <ftp://ftp.atis.org/pub/nanpawg/oversite/require.doc>.

[323] *See Telephone Number Portability Second Memorandum Opinion and Order*, 13 FCC Rcd at 21204.

186. We also note that there may be certain advantages to simply adding pooling administration functions to the NANPA and LNPA. Thousands-block pooling administration involves matters of central office code administration in that the Pooling Administrator requests full NXX blocks from the NANPA as are necessary to maintain the inventory in the pools, but relies on the LNP architecture that is administered by the LNPA. Thus, because duties imposed on the NANPA as it administers central office code assignments may be reduced as a result of carriers requesting numbering resources from the Pooling Administrator, some cost savings may be realized in that area. We seek comment on the efficiencies that may be gained by allowing the current NANPA and LNPA to serve as the Pooling Administrator, and whether these efficiencies outweigh the concerns associated with the concentration of these duties in one entity.

187. *Reclamation of Thousands Blocks.* One aspect of pooling administration in particular raises questions regarding the competitive impact of thousands-block pooling on particular industry segments. Both the NANC Report and the INC Number Pooling Report contemplate a "donation" of thousands-blocks already assigned to a service provider to the pool.[324] Because a service provider may not be using all of the numbering resources allocated to it in a particular NXX code, donation of "uncontaminated" or lightly contaminated thousands-blocks in the NXX code could add significant numbering resources to number pools within an NPA.[325] The NANC and INC have proposed that carriers with thousands-blocks that are up to 10% contaminated should donate those blocks to a pool within a rate center.

188. MCI WorldCom and Ad Hoc have stated that the 10% level will work to excuse ILECs from having to contribute to the pool numbers from their "embedded base" of available numbers.[326] Cox Communications states that there are relatively few thousands-blocks allocated to ILECs that do not have some numbers assigned from them, and as a consequence, it is unlikely that ILECs would return many blocks of numbers to a pool.[327] Cox also suggests that a contamination level of 25% may be more appropriate than 10%.[328]

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[324] NANC Report at § 5.7.3; Thousand Block Pooling Guidelines at §§ 4.1, 8.1.4-8.1.8.

[325] A "contaminated block" of numbers, in relation to thousands-block number pooling, refers to a block of 1,000 numbers (*e.g.*, 3000-3999), in which at least one telephone number is not available for assignment. *See* Thousand Block Pooling Guidelines at § 14.0.

[326] NANC Report at 116 (Minority Opinion of MCI WorldCom and Ad Hoc on 1000 Block Pooling).

[327] Cox comments at 3.

[328] Cox comments at 3 n.3.

We seek comment on whether setting a 10% threshold contamination level will harm a particular segment of the industry.

189. To compensate for the perceived competitive advantage in favor of ILECs, MediaOne proposes that the contamination level for ILECs should be at least 25%, while 10% is appropriate for CLECs. MediaOne argues that this difference would help to ensure that ILECs and CLECs contribute to the industry pool in an equitable way.[329] We seek comment on MediaOne's proposed alternative. In addition, we seek comment on network capacity and SCP implications of setting a contamination level at 25%.

190. *Sequential number assignment.* Because a thousands-block pooling infrastructure will likely require some time to implement,[330] we seek comment on whether we should order some form of sequential number assignment prior to the actual implementation of pooling. By sequential number assignment, we envision a requirement that carriers assign numbers within individual thousands-blocks sequentially, and that, except where necessary to specific customer needs, they fill or substantially fill each thousands block before beginning to assign numbers from another block. Sequential number assignment from within thousands blocks has the potential to forestall other thousands blocks from becoming contaminated—and thus ineligible for possible donation to a pool—prior to implementation of pooling in a given area. Moreover, sequential number assignment may improve carrier efficiency in utilizing numbering resources, regardless of whether pooling is implemented. The INC Pooling Administration Guidelines require that prior to the pooling implementation date, carriers will be required to protect thousands blocks that are less than 10% contaminated.[331] BellSouth states that it supports voluntary sequential number assignment in areas in which number pooling is being deployed on a trial basis.[332] The California Commission states that it has required ILECs to assign numbers sequentially in certain areas.[333]

191. We seek comment in a number of areas regarding a possible requirement for the sequential assignment of numbers. Should sequential number assignment be limited to those areas in which pooling would be required within a certain amount of time? Should

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[329] MediaOne comments at 9.

[330] The NANC Report estimates that thousands-block pooling could be implemented within 10 to 19 months following an FCC order. *See* NANC Report, Recommendation Regarding the Report of the Numbering Resource Optimization Working Group.

[331] *See* Thousand Block Pooling Guidelines at § 8.1.4.

[332] *See* BellSouth comments at 18.

[333] *See* California Commission comments at 13.

non-LNP capable carriers be required to assign numbers sequentially in anticipation of a pooling mandate at some future time? Should any decision to require sequential number assignment be left to state commissions, or are there consistency concerns that would be better addressed by adoption of a nationwide standard? What exceptions to a general requirement of sequential number assignment would have to be put in place to assure a service provider could meet the needs of a large customer or could respond to other types of customer requests or needs? Would sequential numbering cause undue burden to any particular industry segment, or create unnecessary customer inconvenience?

192. Finally, the Thousands Block Pooling Guidelines propose a nine-month inventory of numbers in both the industry inventory and service provider inventory. That is, the Pooling Administrator will attempt to maintain thousands-blocks sufficient for a nine-month inventory,[334] and each service provider may maintain sufficient resources within a pool to last for nine months.[335] We seek comment on whether these inventory levels are appropriate to assure adequate access to numbering resources, while avoiding potential waste of the resource by permitting numbers to lie unused for overly long periods of time.[336]

### 3. Cost Recovery

193. *Federal/State Jurisdiction.* Because we conclude that thousands-block number pooling is a numbering administration function, we tentatively conclude that section 251(e)(2) authorizes the Commission to provide the distribution and recovery mechanism for both intrastate and interstate costs of number pooling. In reaching this conclusion, we note that section 251(e)(2) expressly and unconditionally grants the Commission authority to ensure that carriers bear the costs of numbering administration on a competitively neutral basis.[337] Section 251(e)(2) states that carriers shall bear the costs of numbering administration "as determined by the Commission," and does not distinguish between numbering administration costs incurred in connection with intrastate calls and costs incurred in connection with interstate calls.[338] Thus, we tentatively conclude that section 251(e)(2) addresses both

[334] *See* Thousand Block Pooling Guidelines at § 8.0.

[335] *See* Thousand Block Pooling Guidelines at § 9.3.4.

[336] *See* NANC Report at 117 (Minority Opinion of MCI WorldCom and Ad Hoc on 1000 Block Pooling).

[337] 47 U.S.C. § 251(e)(1); *see* In the Matter of Telephone Number Portability, CC Docket No. 95-116, *Third Report and Order*, 13 FCC Rcd 11701, 11719 (1998) (*Telephone Number Portability Third Report and Order*).

[338] 47 U.S.C. § 251(e)(2).

interstate and intrastate matters and overrides section 2(b)'s reservation of authority to the states over intrastate matters.[339] We seek comment on these tentative conclusions.

194. We tentatively conclude that an exclusively federal recovery mechanism for number pooling will enable the Commission to satisfy most directly its competitively neutral mandate, and will minimize the administrative and enforcement difficulties that might arise were jurisdiction over numbering administration divided. Further, such an approach obviates the need for state allocation of the shared costs of the number pooling administration, a task that would likely be complicated by the multistate nature of the databases to be used for thousands-block pooling implementation. Under the exclusively federal numbering administration cost recovery mechanism, we tentatively conclude that incumbent LECs' numbering administration costs, including costs incurred as a result of number pooling, will not be subject to jurisdictional separations. Instead, we will allow incumbent LECs to recover their costs under the federal cost recovery mechanism established in our final order in this proceeding. We seek comment on these tentative conclusions.

195. *Competitively Neutral Requirement.* Because we tentatively conclude that thousands-block pooling falls within the scope of numbering administration under section 251(e)(1), we also tentatively conclude that section 251(e)(2) requires that the costs of thousands-block pooling implementation be borne by all telecommunications carriers on a competitively neutral basis.[340] Our conclusion is based on the plain language of the statute together with the underlying goal of section 251(e)(2) to prevent the costs of numbering administration and number portability from themselves undermining competition. Parties that argue that the Commission has authority to exclude a class or classes of carriers from the costs of thousands-block pooling implementation should provide a detailed discussion of their position, including applicable statutory and regulatory authority. Commenters also should identify which class or classes of carriers should be excluded and why.

196. Further, we tentatively conclude that, like number portability cost recovery,[341] principles for both the distribution and the recovery of thousands-block pooling implementation must be competitively neutral.[342] We tentatively conclude that an interpretation of section 251(e)(2) that permits the Commission to oversee both the distribution and the recovery of the costs of thousands-block pooling implementation best

[339] 47 U.S.C. § 152(b).

[340] 47 U.S.C. § 251(e)(2).

[341] *See Telephone Number Portability First Report and Order*, 11 FCC Rcd at 8352, 8419-21 (1996); *Telephone Number Portability Third Report and Order*, 13 FCC Rcd at 11731-32.

[342] 47 U.S.C. § 251(e)(2).

achieves the policy goal of ensuring the numbering administration costs overall, including thousands-block pooling costs, are not at odds with the pro-competitive goals of the Act. If the Commission ensured the competitive neutrality of only the distribution of costs, carriers could effectively undo the competitively neutral distribution scheme by recovering their costs only from other carriers. Moreover, we tentatively conclude that the two-part test adopted by the Commission to determine whether carriers will bear the interim and long-term costs of number portability[343] on a competitively neutral basis should be applied here. Specifically, the mechanism for recovering the costs of thousands-blocking pooling: (a) should not give one provider an appreciable, incremental cost advantage over another, when competing for a specific subscriber; and (b) should not have a disparate effect on competing providers' abilities to earn a normal return.[344] We seek comment on these tentative conclusions. Parties that oppose our conclusions should propose specific alternatives.

197. *Cost categories.* We tentatively conclude that thousands-block pooling administration involves three categories of costs: (1) costs incurred by industry as a whole (such as NANP administrator costs, and enhancements to the existing number portability regional database system[345]); (2) carrier-specific costs directly related to thousands-block pooling implementation (such as enhancements to carriers' SCP, LSMS, SOA, and OSS systems[346]); and (3) carrier-specific costs not directly related to thousands-block pooling implementation (such as unrelated upgrades to carriers' networks that happen as a result of thousands-block pooling implementation). We seek comment on these cost categories, and ask commenters to identify other categories of costs, if any, involved in thousands-block pooling implementation. To the extent other costs are identified, commenters should discuss who will incur such costs, for example, LECs, IXCs, CMRS providers, or others.

198. Although the NANC Report recommended that cost allocation and cost recovery issues be addressed by the appropriate regulatory agency[347] and Bell Atlantic, OPASTCO, SBC, and Teligent recommend that the Commission adopt cost recovery methods for any implementation of thousands-block pooling,[348] few parties commented on the costs

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[343] *See Telephone Number Portability First Report and Order*, 11 FCC Rcd at 8419-21; *Telephone Number Portability Third Report and Order*, 13 FCC Rcd at 11731-32.

[344] *Id.*

[345] NANC Report at §§ 5.3.2.4, 5.3.2.13, 5.6.1.

[346] NANC Report at §§ 5.3.2.7 - 5.3.2.11, 5.6.3-5.6.4.

[347] NANC Report at § 5.3.2.17.

[348] Bell Atlantic comments at 4; OPASTCO comments at 3; SBC comments at 8; Teligent comments at 4.

associated with implementation of thousands-block pooling. SBC estimates that its general costs to implement thousands-block pooling will range from $160 to $190 million.[349] U S West estimates that its initial general implementation costs for 1999 will be in excess of $65 million, including changes to its OSS, network modifications, and the creation of a new administrative process.[350] We seek further detailed estimates of the costs of thousands-block pooling, and ask that commenters separate any estimates by category of cost. In addition, we seek comment on the methodology used to develop these and other cost estimates, whether other parties have developed similar cost estimates, and whether the cost estimates account for avoided costs, such as savings from delay in the implementation of an expanded NANP. In particular, we also encourage comments from parties with knowledge of the costs incurred to implementing thousands-block pooling initiatives in the states of Illinois and New York.

199. We tentatively conclude that 251(e)(2)'s competitively neutral requirement applies only to the allocation and recovery of thousands-block pooling implementation costs, that is, shared industry costs and carrier-specific costs directly related to the implementation of thousands-block pooling, and not to carrier-specific costs not directly related to thousands-block pooling implementation (network upgrades). Based on the plain language of the statute, we tentatively conclude that costs not directly related to thousands-block pooling implementation, are not costs of thousands-block implementation. As with number portability, we expect costs not directly related to providing number pooling to encompass a wide range of costs that carriers incur to provide telecommunications functions unrelated to number pooling.[351] Because we tentatively conclude that costs not directly related to providing number pooling are not subject to section 251(e)(2), we also tentatively conclude that the Commission is not required to create special provisions by which those costs may be recovered and carriers may recover those costs in any lawful manner consistent with their obligations under the Act. We seek comment on our tentative conclusions.

200. *Allocation and Recovery of Shared Industry Costs.* We tentatively conclude that the shared industry costs of thousands-block pooling implementation should be recovered through the existing NANPA formula. We note that the NANC Report reached the same conclusion.[352] We seek comment on this tentative conclusion.

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[349] SBC asserts that its actual costs could be higher or lower depending on the Commission's final number pooling plan, ordered industry standards, and implementation schedule. *See* SBC April 21, 1999, *ex parte.*

[350] U S West asserts that detailed estimates are not possible now because of the large number of unknowns still associated with the thousands-block pooling process. U S West comments at 18-19.

[351] *Telephone Number Portability Third Report and Order*, 13 FCC Rcd at 11724.

[352] NANC Report at § 5.3.2.17.

201. The shared industry costs of thousands-block pooling implementation include, for example, modifications to the number portability regional databases to support thousands-block pooling. We tentatively conclude that a competitively neutral allocation of shared industry costs of thousands-block pooling implementation should allocate costs among all telecommunications carriers in proportion to each carrier's intrastate, interstate and international end-user telecommunications revenues. We conclude that the allocation among carriers based on end-user revenues will fulfill section 251(e)(2)'s requirement that "[t]he cost of establishing telecommunications numbering administration arrangements . . . shall be borne by all telecommunications carriers on a competitively neutral basis as determined by the Commission."[353] We also tentatively conclude that once a telecommunications carrier has been allocated its portion of the shared costs of thousands-block pooling implementation, the carrier shall treat that portion of its costs as a carrier-specific cost directly related to thousands-block pooling implementation. We seek comment on these tentative conclusions, and ask whether other methods would allocate shared industry costs on a more competitively neutral basis. Commenters that oppose our tentative conclusions should propose specific alternatives.

202. Further, we seek comment on whether the Commission has the authority to allocate the shared costs of thousands-block pooling implementation only to those carriers that receive thousands-blocks of numbers. For example, if incumbent LECs recover their costs of thousands-block pooling implementation through rate-of-return or price-cap adjustments, we seek comment on whether IXCs would be charged twice for the shared industry costs of thousands-block implementation -- once when the IXCs incur an allocated portion of the shared industry costs, and again when incumbent LECs recover their shared industry costs through access charges. We also ask commenters to address the impact of allocating shared industry costs only to carriers that receive numbering resources. Commenters should discuss whether such an allocation scheme meets the competitively neutral requirement of section 251(e)(2).

203. *Allocation and Recovery of Carrier-Specific Costs Directly Related to Thousands-Block Pooling Implementation.* Carrier-specific costs directly related to thousands-block pooling implementation include, for example, updating carriers' LSMS and interfaces to support thousands-block pooling. We tentatively conclude that carrier-specific costs directly related to thousands-block pooling implementation could be allocated in at least two ways: (a) individual carriers bearing and recovering their own costs of thousands-block pooling implementation; and (b) carriers adding their carrier-specific costs directly related to thousands-block pooling implementation to the shared industry costs. We tentatively

[353] We also used end-user telecommunications revenues to allocate the shared regional database costs of number portability, the costs of which are also governed by section 251(e)(2). *See Telephone Number Portability Third Report and Order*, 13 FCC Rcd at 11725-26, 11754-55.

conclude that it is competitively neutral for carriers to bear and recover their own carrier-specific costs directly related to thousands-block pooling implementation. We seek comment on these tentative conclusions.

204. Recognizing consumers' sensitivity to end-user charges, we tentatively conclude that incumbent LECs subject to rate-of-return or price-cap regulation may not recover their interstate carrier-specific costs directly related to thousands-block pooling implementation through a federal charge assessed on end-users. Instead, we tentatively conclude that incumbent LECs subject to rate-of-return or price-cap regulation should recover their carrier-specific costs directly related to thousands-block pooling implementation through the existing cost recovery mechanisms of rate-of-return or price-cap adjustments.[354] We also tentatively conclude that carriers not subject to rate regulation -- such as competitive LECs, CMRS providers, and non-dominant IXCs -- may recover their carrier-specific costs directly related to thousands-block pooling implementation in any lawful manner consistent with their obligations under the Act.[355] We seek comment on these tentative conclusions, and ask whether they meet section 251(e)(2)'s requirement that numbering administration costs must be borne on a competitively neutral basis.

205. Price cap regulation may affect carriers' ability to recover their costs under the methods described above, or other possible methods, because it restricts the flexibility with which price cap carriers may price various services. We seek comment, therefore, on how price cap carriers should be permitted to recover shared industry costs of thousands-block pooling implementation, carrier-specific costs directly related to thousands-block pooling implementation, and carrier-specific costs not directly related to thousands-block pooling implementation. In particular, we seek comment on whether price cap carriers should be permitted to treat exogenously any of the above thousands-block pooling implementation cost categories. We also seek comment on whether these costs, alternatively, should be placed in a new price cap basket or an existing basket. If parties recommend that such costs should be placed in an existing basket, we ask parties to identify which basket would be most appropriate.

206. As an alternative to recovering costs based on end-user revenues, as proposed above, we seek comment on whether pooling costs should be recovered through a per-number charge. Specifically, we seek comment on whether this approach may have advantages over a revenue-based cost recovery mechanism. For example, would such an approach allocate costs

[354] *See* Bell Atlantic comments at 4 (recommending that incumbent LECs recover thousands-block pooling implementation costs through exogenous adjustments to their access charges).

[355] Although generally not rate regulated, competitive LECs, CMRS providers, and IXCs—as telecommunications carriers—remain subject to the Communications Act and Commission rules.

in proportion to quantity of numbering resources being held by each carrier and thus require carriers with larger quantities of numbering resources to make larger contributions to pooling costs than carriers with fewer resources? In addition, we seek comment on whether basing cost recovery on the quantity of numbers being held would discourage carriers from maintaining excessively large quantities of non-revenue generating numbers while rewarding carriers that efficiently use their numbering resources.

207. We also seek comment on whether tying cost recovery for pooling to the quantity of numbers held by each carrier would provide economic incentives to participate in the pooling process by donating excess blocks back to the pool. We seek comment on whether holding spare numbers creates a cost for such carriers for which they have no offsetting revenue and whether each carrier would balance the benefit of holding a block of unused numbers against the costs associated with cost recovery. We seek comment on whether this method of cost recovery would provide an incentive to return spare blocks of numbers for which there is no foreseeable need, and ask whether this method meets section 251(e)(2)'s competitively neutral requirement. We also seek comment on other recovery methods for thousands-block pooling implementation costs.

208. Finally, as discussed in section V.E, above, one possible solution to the numbering crisis is for us to simply establish thresholds for efficient use of numbering resources, but leave the choice of method for achieving these thresholds to individual carriers. Thus, we would require carriers to achieve certain utilization levels for their numbering resources within a given area, but we would not mandate that they implement any particular technical solution, such as participating in thousands-block number pooling, provided the mandatory threshold levels are achieved. If we allow carriers to choose the method for achieving compliance with the mandatory threshold levels, we tentatively conclude that carriers would bear their own implementation costs, whether they meet the mandatory threshold levels through thousands-block pooling implementation or by some other means. We seek comment on this tentative conclusion, and ask whether it complies with section 251(e)(2)'s competitive neutrality requirement.

209. *Allocation and Recovery of Carrier-Specific Costs Not Directly Relating to Thousands-Block Pooling Implementation.* We tentatively conclude that, whether or not the NANPA formula covers the costs of thousands-block pooling implementation, carrier-specific costs not directly related to thousands-block pooling implementation should be borne by individual carriers as network upgrades; as such, carrier-specific costs not directly related to thousands-block pooling implementation are not subject to the competitively neutral requirements of section 251(e)(2). We seek comment on this tentative conclusion, and ask if there are alternative methods for recovering this type of cost.

210. *State Allocation and Recovery Mechanism.* As noted above, we tentatively conclude the determination of whether to implement thousands-block pooling in a given area may be made in several ways.[356] We tentatively conclude that the states' role in deciding on a cost distribution or recovery mechanism for thousands-block pooling implementation will depend on who decides whether to implement pooling in a given area. If we simply order that LNP-capable carriers engage in thousands-block number pooling in the largest 100 MSAs, we tentatively conclude that states must follow the cost distribution and cost recovery mechanism adopt by the Commission. If, on the other hand, we delegate to state utility commissions the decision-making authority as to whether to implement thousands-block pooling in any area, we tentatively conclude that we also will delegate to states the authority to implement a cost distribution and recovery mechanism, subject to our principles of the competitively neutral mandate of section 251(e)(2). Finally, if we allow state utility commissions to make the decision as to whether to opt in or out of a nationwide thousands-block pooling architecture on a regional basis, we tentatively conclude that we also will allow state utility commissions to choose whether to opt in or out of our cost distribution and recovery mechanism. If a state commission elects not to make the decision as to whether an area should opt in or out of a nationwide thousands-block pooling architecture, and we choose another entity to make the decision, we tentatively conclude that the state must follow our cost distribution and recovery mechanism. We seek comment on these tentative conclusions.

### 4. Transition Issues

211. In commenting on the NANC Report, several parties suggested that, although ITN pooling constituted the most efficient manner in which to allocate numbering resources, due to the difficulty in implementing it both in terms of time and cost, thousands-block pooling should be implemented in the near term with a transition to ITN pooling to follow in the future.[357] Other parties assert that thousands-block pooling is not a "stepping stone" toward ITN pooling.[358]

212. Although we have tentatively concluded not to pursue ITN pooling,[359] we are interested in further study on the use of ITN pooling as a numbering resource optimization measure, as it appears to offer the greatest potential for eliminating, or nearly eliminating, "stranded" numbers that may be allocated to carriers in either an NXX code or a thousand-

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[356] *See supra* ¶¶ 146-147.

[357] Madison comments at 2; MediaOne comments at 6; New Hampshire Commission comments at 4; New York Commission comments at 5.

[358] Ameritech comments at 21; Nextel comments at 12.

[359] *See supra* Section V.C.1.

block of numbers, but are not assigned to individual customers. Because of the potential for ITN pooling to offer a more efficient use of numbering resources than thousands-block pooling, we seek comment on the possibility of migrating from a thousands-block pooling regime to an ITN pooling regime.

213. As a threshold matter, we seek comment on whether the benefits of moving to ITN pooling from thousands-block pooling outweigh whatever costs may be involved. We are also concerned that the implementation of thousands-block pooling not hinder a possible migration to ITN pooling. Therefore, we seek comment on what measures can be taken in implementing thousands-block pooling that could ease a transition to ITN pooling. We also seek comment on whether the costs of building thousands-block pooling systems that may allow for an easier transition to ITN pooling are not outweighed by the benefits of doing so, in terms of future cost savings in implementing ITN pooling.

214. We also seek comment on whether UNP can be used simultaneously with thousands-block pooling, or whether special considerations must be met for the two measures to coexist. If it appears that the costs of allowing UNP and thousands-block pooling to coexist outweigh the benefits, we seek comment on whether we should allow carriers to port numbers by mutual agreement among themselves prior to a mandate of pooling, or in areas in which pooling may never be mandated.

### E. Carrier Choice of Numbering Optimization Strategy

215. In addressing potential numbering optimization solutions outlined above, we believe it is also important to consider whether there are incentive-based mechanisms that could be used to address the numbering crisis without the need for more intrusive or burdensome regulatory mandates on carriers. In Section IV, among other things, we sought comment on whether carriers should be required to meet certain utilization thresholds to obtain additional numbering resources. In preceding subsections of Section V, we sought comment on whether carriers should further be required to implement technical measures, both LNP-based and non-LNP based, that would promote more efficient allocation and use of numbering resources.

216. Here, we seek comment on whether we should simply establish thresholds for efficient use of numbering resources, but leave the choice of method for achieving these thresholds to individual carriers. Under this alternative, as discussed in Section IV,[360] we would require carriers to achieve certain utilization levels for their numbering resources within a given area, but we would not mandate that they implement any particular technical solutions, such as thousand-block number pooling, so long as they achieved the mandatory

[360] *See* discussion *infra* ¶¶ 64-67.